

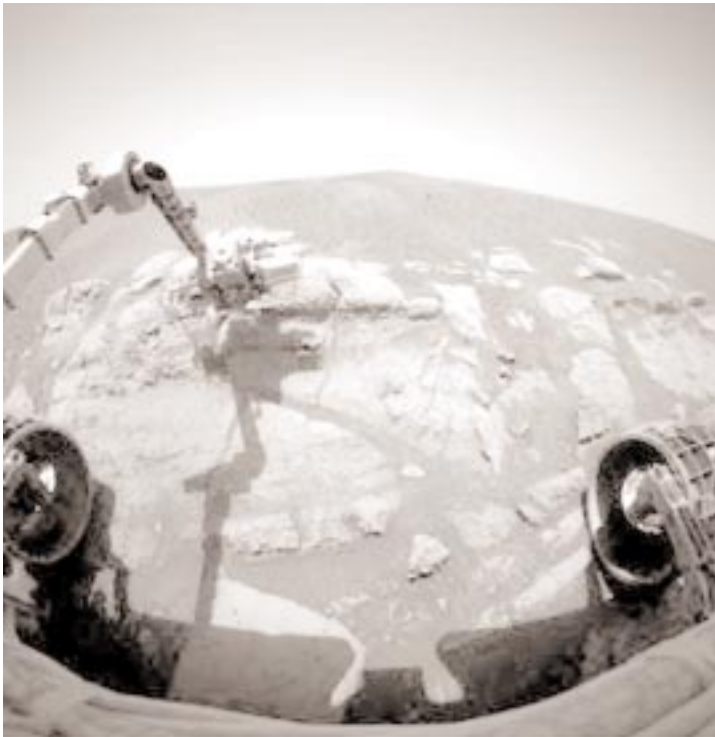
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Rovers keep on rocking

Mars Exploration Rover

Opportunity casts a shadow over the El Capitan area that the rover examined with tools on its robotic arm.

Opportunity took this image with its front hazard-avoidance camera on Feb. 23.



THE TWIN MARS *Exploration Rovers, Spirit and Opportunity, diligently continue their geology work on the Red Planet.*

On sol 31, which ended at 3:36 a.m. Wednesday, Feb. 25, Opportunity awoke to “Rock Around the Clock” by Bill Haley and his Comets. At 1 a.m. Local Solar Time, Opportunity sent data to Earth via the Mars Global Surveyor orbiter and then sent another whopping 145.6 megabits of data at 3:30 a.m. Local Solar Time via the Mars Odyssey orbiter.

During the morning hours, Opportunity collected data with the alpha particle X-ray spectrometer for five hours and took measurements with its miniature thermal emission spectrometer from inside its newly formed hole that was created on sol 30 by the rock abrasion tool. Later, Opportunity retracted and closed the door of the alpha particle X-ray spectrometer and swapped the Moessbauer spectrometer into the hole made by the abrasion tool for a leisurely 24-hour observation.

Opportunity also updated its “attitude knowledge,” which fine-tunes the rover’s information about its exact location and position on Mars. Updating the attitude knowledge allows the rover to more accurately point the high-gain antenna toward Earth, which increases the communications capabilities. The attitude adjustment also enables scientists and engineers to point instruments onboard Opportunity more precisely at targets of interest, such as particular rocks and patches of soil. To adjust the attitude knowledge, engineers have the rover turn the panoramic camera

to the Sun and watch the Sun travel across the sky for 15 minutes. The rover is then smart enough to take the Sun movement data collected from the panoramic camera to calculate its own location in the universe—on Mars. The rover gathers attitude knowledge errors over time as it drives and uses the robotic arm extensively, but it only needs an attitude adjustment about once a week or after driving long distances.

The plan for sol 32, which ended at 4:15 a.m. Thursday, Feb. 26, was to take another unique set of Moessbauer measurements to look at the rover-created hole in a different spectrum. The goal was to then crawl slightly forward on sol 33 to position Opportunity to use the rock abrasion tool on the upper target of the El Capitan/McKittrick area.

To inspire a morning “run” on sol 51, which ended at 3:15 p.m. Tuesday, Pacific time, Spirit woke up to Vangelis’ “Chariots of Fire.” The rover deployed its arm, took microscopic images of the soil in front of it and then proceeded toward its target, “Middle Ground.” Spirit drove 30 meters (98.4 feet), breaking its own record for a single-sol traverse. Along the way, Spirit paused to image rocks on both sides of the drive path with its panoramic camera.

The auto-navigational software that drove the last 12 meters (39.4 feet) of the traverse to the “Middle Ground” target warned Spirit that the slope into the hollow that houses it was too steep (according to parameters set by rover engineers). Spirit then paced along the rim, looking for a safe way down. Unable to locate a secure path into the crater before the sol ended, Spirit ended up facing slightly west of north instead of northeast, as the plan called for.

Rosetta set for comet mission

By DC Agle

Like the massive white whale in Herman Melville’s 1851 classic “Moby Dick,” comets have long been considered swift, elusive harbingers of change. So it should be of little surprise that one of the best ways for scientists to study the mysteries of comets is to harpoon one.

The European Space Agency’s Rosetta spacecraft was scheduled to lift off on Wednesday, Feb. 25, at 11:16 p.m. Pacific time from the Kourou spaceport in French Guiana. Rosetta will reach Churyumov-Gerasimenko, a 4-kilometer-diameter (2.5-mile) comet, in May 2014. The journey includes flybys of Mars (2007) and Earth (2005, 2007 and 2009).

Among the instruments aboard Rosetta are three instruments funded by NASA and a key component of a fourth. The NASA instruments will examine Churyumov-Gerasimenko from the orbiter.

“This comet has only about three-hundred-thousandths the gravity of Earth,” said JPL’s Dr. Claudia Alexander, project scientist for the U.S. role in the mission. “Rosetta will be able to make observations from as close as 2 kilometers (1.2 miles). The data from our state-of-the-art instruments will be amazing.”

When this rendezvous occurs, Churyumov-Gerasimenko will be about three times as far from the sun as the Earth is. Over the next 18 months Rosetta will study how the comet changes as it moves closer to the sun.

In November 2014, Rosetta will drop its experiment-laden, harpoon-firing lander on Churyumov-Gerasimenko’s icy nucleus.

“What you have to understand is that comets are primordial remnants of the early solar system,” explained Dr. Paul Weissman of JPL. “They are the keys to understanding the way the whole solar system, the Earth, and how even we came into being. And with Rosetta we will be able to observe, study and analyze this primordial material up close for more than a year,” he said.

JPL supplied the Microwave Instrument for Rosetta Orbiter, the first of its type on any interplanetary mission. This instrument can reveal the abundances of selected gases, their temperatures, the speed at which they are coming off the nucleus and the temperature of the nucleus. Scientists will use it to monitor changes in how vapors are released from the nucleus as the coma and tail grow. They will be studying water, carbon monoxide, ammonia and methanol, four of the most abundant gases from comets. Dr. Samuel Gulkis of JPL’s Earth and Space Sciences Division is principal investigator.



Survey shows JPL gains as preferred employer

By Mark Whalen

JPL experienced significant progress in a recent employer preference survey by the National Society of Black Engineers (NSBE), the largest student-managed engineering organization in the country.

Society members rated the Laboratory the 44th best organization to work for in the United States. That represents an increase of 109 spots from the previous year’s survey and the biggest jump of all companies rated in the survey.

“The remarkable boost in JPL’s standing as a preferred employer among NSBE members is very impressive to say the least,” noted Dr. Eddie Tunstel, a senior robotics engineer in Section 348 and an NSBE member-at-large. “I believe that our strong presence at the 2003 NSBE annual national convention had something to do with it. With this news comes a level of momentum that JPL can capitalize on by repeating a strong presence at the 2004 convention next month—taking with it the heightened popularity of our current missions.”

“This is great news for NASA and JPL,” said Ken Brown, an electro-optical systems engineer currently working on the Terrestrial Planet Finder mission. He is also heavily involved with outreach for Divisions 34 and 38. “I think these numbers really show the power of outreach from the JPL community; specifically the efforts of the technical community,” he said. “Considering that this survey was conducted before the MER twins landed, it really does show that we are doing something right as far as outreach.”

“I think it’s fantastic that college students are holding JPL in high regard when considering career op-

portunities,” added Shonte Wright, Mars Exploration Rover thermal systems engineer. “JPL is a multifaceted organization that benefits from highly motivated students.”

IBM remained the survey’s top employer of choice for the seventh consecutive year. Microsoft, Lockheed Martin, General Electric, Johnson & Johnson, General Motors, Boeing, Dell, Proctor and Gamble, and Intel Corp. round out the top 10 companies. The complete results of the survey are published in the November-December issue of NSBE Magazine.

The results of this year’s survey appear to be influenced by the members’ search for job stability, said Dr. Peter Bachiochi, the Eastern Connecticut State University professor who prepared the 15th annual NSBE 50 Employer Preference Survey. While past surveys may have shown members to have hard and fast requirements for a potential employer, this year’s results show that members are responding to societal uncertainty with a more flexible notion of what defines a preferred employer.

“Even with the instability and uncertainty in the world, NSBE members still look toward the future with hope,” Bachiochi said.

“JPL will continue to work with the NSBE, as well as the Society of Hispanic Professional Engineers, the American Indian Science and Engineering Society and the Society of Women Engineers,” noted Toby Solorzano, of the Diversity Programs Office. “This was a pleasant surprise to see JPL on the list, and we will continue to work to make the Lab an employer of choice.”

News Briefs



Mike Sander



Pete Theisinger



Richard Cook

Three receive Lew Allen Award

Three JPL scientists have received the 2003 Lew Allen Award for Excellence. The annual awards recognize and encourage significant individual accomplishments or leadership in scientific research or technological innovation by JPL employees during the early years of their professional careers.

The recipients are DR. JENNIFER DOOLEY of Division 35, DR. CHRISTOPHE DUMAS of Division 32, and DR. EUI-HYEOK YANG of Division 38.

Dooley received her award for research contributions and leadership in the area of large-apertures technology. Dumas received his award for leadership in both the advancement of the applications of adaptive optics to astrophysical problems, and the establishment of JPL as a leader in the field of adaptive optics. Yang was recognized for his excellence in advancing the use of Micro Electro Mechanical Systems-based actuators for space applications.

Each winner received a wall plaque and a research award of \$25,000 from the Research and Technology Development Fund, which is used at JPL to enhance the professional efforts of the awardees.

The award was established in 1990 in honor of Dr. Lew Allen, who served as JPL's director from 1982-90.

Roth honored by Slovak homeland

LADISLAV ROTH, a JPL research scientist in the field of planetary physics, returned to his Slovak homeland last fall to receive the Slovak Academy of Sciences' International Prize.

With JPL since 1973, Roth was honored with this prestigious award for his contributions to space exploration, which included returning to Slovakia twice a year to teach crash courses in planetary science and geology, and most importantly for collaborating with scientists in Slovakia to bring planetary science up to date and help under-funded institutions reach the modern level of research.

"Slovakia has a good educational system but they suffer from financial problems, so science is not pursued and cultivated as much as it should be," Roth said.

In addition to helping Slovakia modernize space exploration, Roth has persuaded scientists to inquire about and install the needed equipment to monitor the presence of greenhouse gases at various altitude distributions, which hasn't been performed before.

A veteran of radar and planetary science, Roth has used microwave remote sensing and radar altimetry to explore Mars, Venus, the moon and the satellites of Saturn.

Also last year, Roth was named an honorary professor of Natural Sciences. In 1998, he received an honorary doctorate from a major Slovakia, which recognized natives who have made contributions to their homeland.

Roth was also recognized for co-editing "The Face of Venus," a report on the results of the Magellan radar mapping mission to Venus, published by NASA in 1995.

"It always feels good to be noticed," he said. "Even the humblest person wouldn't mind receiving an award; it feels good."

Space is coming to the JPL Store

The JPL Store will be closing for approximately three weeks beginning March 1. A temporary store will be located in the room in the northwest corner of the 167 cafeteria dining room. Access will be through the cafeteria. Temporary JPL Store hours of operation will be 8:30 a.m. to 3:30 p.m. Monday through Friday.

"During the month of March we will be refurbishing the existing store site to provide customers easier access to merchandise and give us the opportunity to enhance our merchandise selections," said JPL Store Manager JUDI CAPRON. "We are really excited about the project and feel that this enhancement will allow us to better serve the JPL community and visitors."

Capron urged JPLers to visit the temporary site, which will continue to provide film-processing services, tickets sales, and shipping and mail services. Web orders will be filled, and a limited selection of merchandise will also be available.

JPL cafes receive "A" health rating

JPL's three cafeterias each received an "A" rating following Feb. 19 inspections by the Los Angeles County Department of Health Services.

JPL cafeteria liaison BONNIE GERSZT thanked Caltech Dining Services staff for their hard work in resolving areas of improvement identified in audits in November.

Each of the three cafeterias was given a rating of 90 or higher, which merits the "A" rating, defined as "generally superior in food handling practices and overall food facility maintenance."

The county conducts the health inspections annually, Gerszt said.

Volunteers sought for L.A. Marathon

Volunteers are sought to work at a water-dispensing station at the Los Angeles Marathon, to be held Sunday, March 7.

The Caltech Athenaeum is sponsoring the water station at the course's Mile 21, at 3rd Street between Arden and Lucerne.

If interested, call Athenaeum employee JORGE ALVARADO at (626) 395-8261. Volunteers may also register at <http://www.lamarathon.com>. Click "volunteers."

Secretaries may apply for mentoring

JPL's Office Professional Mentoring Group is organizing the next mentoring session for JPL secretaries. Participants will learn from others and share their experiences, while being supported and guided by mentors who have a wealth of experience and who are willing to share their knowledge.

Applications for the program can be found at <http://hr/officepros>. Return your application to JOY HODGES, mail stop 301-486, no later than Monday, Oct. 11. For more information, call Hodges at ext. 4-7041.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (the Wellness Place). For more information, call the Employee Assistance Program at ext. 4-3680.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Group—Meets the first Friday and third Thursday of the month at noon in Building 111-117. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in Building 167-111 (the Wellness Place).

Working Parents Support Group—Meets the third Thursday of the month at noon in Building 167-111. For more information, call the Employee Assistance Program at ext. 4-3680.

Saturday, February 28

David Crosby Concert—The two-time Rock and Roll Hall of Famer will perform at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$32, \$28 and \$24; high school age and under, \$10. For more information, call (626) 395-4652.

Sunday, February 29

Chamber Music—The Cassatt String Quartet with Humbert Luccarelli will perform at 3:30 p.m. in Caltech's Beckman Auditorium. Tickets are \$29, \$25, \$21 and \$17. For more information, call (626) 395-4652.

Tuesday, March 2

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

"Real Women and Other Unseen Images in Hollywood"—Caltech's Beckman Auditorium will host a screening of the movie *Real Women Have Curves* at 6 p.m., followed at 8 p.m. by a talk by author Josefina Lopez. Free admission. For more information, call (626) 395-4652.

Wednesday, March 3

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

"Inventing Historical Truth on the Silver Screen"—Caltech history professor Robert Rosenstone will lecture at 8 p.m. in Caltech's Beckman Auditorium. Free admission. For more information, call (626) 395-4652.

Thursday, March 4

JPL Gun Club—Meeting at noon in Building 183-328.

Friday, March 5

Caltech Ballroom Dance Club Party—Held in Avery Dining Hall from 9 p.m. to midnight, preceded by a mini-lesson to teach CeroC dancing at 8:30 p.m. The Caltech Ballroom Dance Team will also perform special CeroC and Mambo formations. Refreshments will be served, and as always, no partner or experience is required.

Parametric Analysts Workshop—The International Society of Parametric Analysts' Southern California Chapter workshop will be offered from 8 a.m. to 4 p.m., Building 180-101. It is co-hosted by the Software Quality Improvement Project and the JPL Costing Office (161). For more information, contact workshop co-chair John Powell at ext. 3-4355 or via e-mail.

Saturday, March 6

San Jose Taiko—Japanese drumming is fused with Latin, Brazilian and African rhythms at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$25, \$21 and \$17; high school age and under, \$10. For more information, call (626) 395-4652.

Tuesday, March 9

JPL Stamp Club—Meeting at noon in Building 183-328.

Wednesday, March 10

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Toastmasters Club—Meeting at 5 p.m. in the 167 conference room. Call Debbi Llata at ext. 3-3690 for information.

Thursday, March 11

Clogging Class—This new class for beginners will be offered every other Thursday at noon in Building 300-217. For more information, call Shary Devore at ext. 4-1024.

Saturday, March 13

The Gizmo Guys—The duo of Allan Jacobs and Barrett Felker use juggling to demonstrate the science of patterns in this performance for children, set for 2 p.m. in Caltech's Beckman Auditorium. Tickets are \$12 for adults, \$7 for children. For more information, call (626) 395-4652.

Sunday, March 14

Chamber Music—The Juilliard String Quartet will perform at 3:30 p.m. in Caltech's Beckman Auditorium. Tickets are \$29, \$25, \$21 and \$17. For more information, call (626) 395-4652.



Dutch Slager / JPL Photolab



Ladislav Roth



Dutch Slager / JPL Photolab

Nine high school students from Pasadena's sister city, Xicheng, China, visited the Lab in January. Above, Morris Birnbaum of Section 3449, a member of the Pasadena Sister Cities committee, shows the guests the Mars gallery in Building 317. As part of the U.S. State Department-sponsored exchange program, the students spent several weeks at Pasadena's Blair High School and visited other areas of Southern California.



JPL
Women's
History
Month
Luncheon

Celebrating the Voice of Women— Inspiring Hope and Possibility

h o n o r i n g

Sally Ride

*Former NASA Astronaut
President, Imaginary Lines Inc.
Professor of Physics, UCSD*



Thursday, March 11, 2004

11:00 am – 1:00 pm

La Cañada Flintridge Country Club

5500 Godbey Drive, La Cañada Flintridge

Seating is limited.

All JPL employees are invited to attend.

Ticket Information

Tickets are \$18 and can be purchased by sending a check payable to Katrina Melendez to JPL M/S 125-209 plus the completed Luncheon Ticket Request Form at the bottom of this page. Tickets will be sent to you via JPL mail. No refunds will be given once a ticket has been issued. One ticket per person.

Luncheon Ticket
Request Form

Please Print

Name _____

M/S _____ Phone _____

Are you an ACW Alumnus: ☐ Yes ☐ No

Menu Options (please indicate your choice):

Entrees are served with a mixed green salad with choice of dressings, rolls, dessert, coffee, tea, and iced tea.

☐ Chicken Kiev ☐ Vegetarian Pasta Primavera



ASTRONAUT'S MISSION: SCIENCE CAREERS FOR GIRLS

This year's ACW luncheon theme is "Celebrating the Voice of Women — Inspiring Hope and Possibility." The keynote speaker and honoree for the event is Dr. Sally Ride, a former NASA astronaut and the first American woman in space.

Ride is currently the President and CEO of Imaginary Lines Inc. and a professor of physics at the University of California, San Diego.

Ride was raised in Los Angeles. She attended Stanford University, where she received her undergraduate degree in physics and English in 1973, and her M.S. and Ph.D. in physics in 1975 and 1978, respectively. Shortly thereafter, she was selected for NASA's astronaut corps. Her first flight was aboard the Space Shuttle Challenger in 1983; her second was also aboard Challenger, in 1984. During those flights, she deployed communications satellites, operated the robot arm, and conducted experiments in materials, pharmaceuticals and Earth remote-sensing.

Training for her third spaceflight was interrupted by the Challenger accident. Ride served as a member of the Presidential Commission investigating the accident, and chaired its subcommittee on Operations. She then served as NASA's first director of Strategic Planning, producing a report titled, "Leadership and America's Future in Space." Ride also created and was the first director of NASA's Office of Exploration.

In 1989, Ride joined the faculty at UCSD as a professor of physics and director of the University of California's California Space Institute. In 2001 she founded her own company, Imaginary Lines, to pursue her long-time passion: motivating girls and young women to pursue careers in science, math and technology.

Imaginary Lines is an organization dedicated to supporting the large numbers of girls in 5th to 8th grades and beyond who are (or might become) interested in science, math and engineering and providing this support in ways they will find interesting and entertaining. Imaginary Lines designs, produces and markets programs and products for girls and young women that empower them, engage them and encourage their interests as they grow personally, academically and, down the road, professionally. The organization's aim is to create an environment that will support girls' interests in science, math and technology, and increase the numbers of girls and young women comfortable with science and math. The company also operates the Sally Ride Science Club, whose mission is to keep girls engaged in science by connecting them to people, information and attitudes that will nurture their interest at a critical time in their lives.

Ride has been a member of the President's Committee of Advisors on Science and Technology and the National Research Council's Space Studies Board, and has served on the Boards of the Congressional Office of Technology Assessment, the Carnegie Institution of Washington, and the NCAA Foundation. She is a member of the Corporate Directors' Forum, and has served on the Boards of Veridian and the Mitre Corporation. She is a Fellow of the American Physical Society, a member of the Pacific Council on International Policy, and currently serves on the Board of Trustees of Caltech.

Ride has been inducted into the National Women's Hall of Fame and the Astronaut Hall of Fame. She has also received numerous other honors and awards, including the Jefferson Award for Public Service, the von Braun Award, and the Lindbergh Eagle, and has twice been awarded the National Spaceflight Medal.

Long an advocate for improved science education, Ride has written several science books for children: *To Space and Back*; *Voyager: An Adventure to the Edge of the Solar System*; *The Third Planet: Exploring the Earth from Space*; *The Mystery of Mars*; and *Exploring Our Solar System*. She has also initiated and directed education projects designed to fuel middle school students' fascination with science.

Back to class

Elachi, Cook join astronaut in Explorer School visit

By Mark Whalen

JPL Director Dr. Charles Elachi and Mars Exploration Rovers Project Manager Richard Cook shared the excitement of space exploration with eager youngsters last week with a visit to a local NASA Explorer school.



Bob Brown / JPL Photolab

Elachi and Cook were joined on the Feb. 19 trip to Shirley Avenue Elementary School in Reseda by astronaut Dr. Mike Barratt, a physician, who is training for his first space shuttle flight next year.

The trio spoke with 5th grade students and their teachers in classroom visits followed by talks and presentations in the auditorium. In addition to showing students a video of President Bush's recent announcement of NASA's new vision, Elachi expressed to the students how robotic exploration is one part of a far grander vision of robotic and human space exploration, and that NASA's task is to turn this vision into reality.

Elachi told the students that NASA has three major objectives:

- Understand and protect the home planet. "You have a responsibility to the next generation," he said.
- Explore the universe and search for life. "Within 10 to 15 years technology will allow us to image many of the stars you see in the sky, then we can look for planets around those stars."
- Inspire the next generation of explorers, "And that's you. If you put your mind to it, anything is possible," Elachi said. "There is no doubt in my mind that many of you will be the scientists and engineers making the discoveries of the future."

Cook told the students that today is not unlike the time when the Lewis and Clark expedition ventured into the uncharted territory of the American west 200 years ago. "In a sense, we're the trailblazers for the exploration of the solar system."

Cook showed the audience video of the events surrounding the two successful Mars Exploration Rover landings in January. He explained how Spirit's and Opportunity's solar panels operate under the same amount of power as 200-watt light bulbs, and talked about the mission's airbag landing system.

He then asked the youngsters to don 3-D glasses to view images of the Martian surface from Spirit's and Opportunity's cameras that had been posted on the auditorium wall.

Invoking his school days, Barratt said to the students, "As a kid, I loved telescopes and the ocean. Then when I got a little older, I got really interested in flying and medicine. I thought, 'How can I put all this together?'"

Prior to his current astronaut training duties, Barratt worked as a NASA flight surgeon, helping to fulfill his dream of being like Dr. McCoy, the doctor in the TV series Star Trek. "The science of space medicine is very new, and it's perfect for me," he said, explaining that, "If someone in space gets sick we have to have trained medical people to help them."

Barratt is now training for a six-month stint aboard the International Space Station. He told the students about the effects of weightlessness on the astronauts, noting that they need to do at least two hours of exercise daily to keep healthy. He said his ex-

"There is no doubt in my mind that many of you will be the scientists and engineers making the discoveries of the future."

Dr. Charles Elachi



Tom Wynne / JPL Photolab

"As a kid, I loved telescopes and the ocean. Then when I got a little older, I got really interested in flying and medicine. I thought, How can I put all this together?"

Dr. Mike Barratt



Bob Brown / JPL Photolab

"In a sense, we're the trailblazers for the exploration of the solar system."

Richard Cook

periments will be geared toward long-term spaceflight, leading to a potential human mission to Mars or beyond.

"There is so much to learn," he said, "but I have the best job on the planet."

Students' questions ranged from whether astronauts can communicate with family members in space to the types of flight simulations used in training. Barratt said astronauts can send e-mail and participate in videoconferences with family every day, and "I can call just about any phone number on Earth." He also noted there are many types of flight simulations, specifically one done underwater and another to create conditions in a shuttle cockpit during launches and landings.

Elachi, Cook and Barratt each stressed the need to study hard in school—especially math and science subjects—and to not give up if the subject is hard.

"If you're in a job you love, going to school never stops," Barratt said.

JPL's Education Office supports and provides resources to four NASA Explorer Schools. Besides Shirley Avenue Elementary, Southern California Explorer schools supported by JPL are Washington Middle School in Pasadena, Colton Joint Unified School District GATE program in Fontana and 153rd Street School in Los Angeles.

Explorer Schools have a three-year participation commitment. There are three teachers, all of whom work with 5th graders, and an administrator (the principal). The school builds its team and its instructional or school-improvement objectives. They have an action plan that is implemented with JPL support.

Steven Friedman, the Shirley Avenue principal, said, "as a result of JPL's help, we have a powerful science program." Robert Collins, Los Angeles Unified School District Local District "C" superintendent, added that those from JPL and NASA who have supported the effort "are true American heroes, people to be respected, followed and be proud of."

Each year, the NASA Explorer Schools program establishes a three-year partnership between NASA and 50 school teams, consisting of teachers and education administrators from diverse communities across the country.

While partnered with NASA, Explorer Schools' teams acquire and use new teaching resources and technology tools for grades 4 through 9 using NASA's unique content, experts and other resources. Schools in the program are eligible to receive funding (pending budget approval) over the three-year period to purchase technology tools that support science and mathematics instruction.

The NASA Explorer School program provides opportunities for schools, administrators, students and their families to partner with NASA to improve student learning; participate in authentic experiences with NASA science and technology; apply NASA science, mathematics, and technology knowledge to real-world issues and problems; and participate in special events and other opportunities.



Dick House

Passings

R.C. “DICK” HOUSE, 76, retired from the Public Information Office and a longtime editor of Universe, died Jan. 28 at his home in Encinitas.

House wrote and edited for the paper for 23 years before his 1992 retirement.

JPL astronomer Eleanor Helin accorded House a rare honor in 1992 by naming a newly discovered asteroid after him.

House is survived by his wife, Doris, daughter Laura and son Jonathan.

Donations are suggested to the Homestead Foundation of Western Writers of America, c/o Jim Crutchfield, 1012 Fair St., Franklin, TN 37064.

Letters

Friends, co-workers and the Voyager Team: We wanted to thank you all for your support, comfort, assistance, prayers and sympathy during the recent passing of my father, Tim W. Wong. We wish to thank everyone who sent beautiful flowers and took time to attend the service. We appreciate your kindness, help and caring during this difficult time. Also thank you to JPL for the beautiful plant. Thank you all very much.

Regina Wong and Eric Nicolich

Thank you to all my friends and co-workers for their kindness and thoughtfulness after the passing of my father. Thank you as well for the flowers and cards.

Tom Glavich

Many thanks to my co-workers and friends at JPL for the kind and caring thoughts on the passing of my mother in January. The flowers, phone calls, messages, cards, and notes meant a lot to me during that especially stressful time. The plant and sympathy card sent by the Laboratory arrived just at a moment when I was feeling particularly low, and that thoughtful gesture was much appreciated.

Marilyn Morgan, Section 274

I would like to thank my friends and co-workers for all the kindness and support shown me due to the recent passing of my husband. I would also like to thank you for the beautiful plant and for your donations to the scholarship fund in remembrance of my husband, Tom.

Michele Johnson

Retirees

The following JPL employees retired in February:

David Curkendall, 41 years, Section 367; Robert Keskinen, 38 years, Section 352; William Hullinger, 37 years, Section 319; Irene Chan, 32 years, Section 224; Parker Cowgill, 32 years, Section 354; Szabolcs DeGyurky, 25 years, Section 369; Mukund Gangal, 23 years, Section 810; John Sisino, 21 years, Section 314; Francine Fisher, 19 years, Section 269; Charles Shinbrot, 17 years, Section 108; Conrad Sherman, 14 years, Section 262; Delbert Mitchell, 13 years, Section 252; Robert Sinclair, 13 years, Section 351.

Classifieds

For Sale

AUDIO EQUIPMENT: amplifier, Lightning Audio Bolt B200.2; car speaker, 10," Lightning Audio P1.12.4, 100 watts/4 ohms, all for \$100. 661/299-2490, Yvonne.

BABY ITEMS: crib, wood, made in Italy, incl. mattress, height adjustable, exc. cond., \$150/obo; car seat, made by Century, front-facing, up to 40 lbs., gd. cond., \$25/obo. 626/791-6101.

BAR, custom Mediterr.-style, free-standing or attached w/one bolt to wall, 45" H x 26" D x 52" W, seats 3, two 50" shelves for bottles/glasses, blk. leather padded elbow rest, brown tile surfaces, \$200/obo. 626/793-4871.

BASEBALL TICKETS, Dodgers, selected games from season ticket pkg., loge level (orange), aisle 132 (inside 1st base), 2 tickets/game, face value of \$30/ticket; see at www.delunac.net/tickets. 626/296-1253, for details/games.

BBQ, Weber kettle, 22.5" diam., gd. cond., orig. Weber instruction booklet w/recipes, \$50; CHAINSAW, WEN electric, 12" bar, chain

and orig. instruction book, gd. cond., \$20. 626/793-3393.

BED, Cometa, queen, cherry wood, Ital. design, new, pd. \$1,300, sell for \$900; <http://www.modfurniture.com/italian.html> for pics. 244-8822.

BIRD: Senegal parrot; 11 mo. old, hand-raised, loves att'n, green w/yellow & red vest, must sacrify, to make rm for new baby, inferior bird is \$600 at Petco, sell for \$350; for more about this breed, go to <http://www.wingscc.com/aps/s-desc.htm>. 626/806-3378.

BOOKS: "Applied Electronics," WWII M.I.T. classic, publisher John Wiley, 1943, \$12; "The Big Band Almanac," profuse illustrations and stories of the country's popular orchestras from the mid-1950s, \$10; creative cookbook, large, like new, 1,000 recipes, \$20 value, \$7. 626/793-1895, Albert.

CAMERA, Canon Elph APS, \$100; CORDLESS PHONE/ANSWERING MACHINE, Sony, digital, \$40; SPEAKERS, Acoustic Research, \$40/pair; CD PLAYER, Sony Discman, with am/fm, \$50; TUNER/AMP, Onkyo TX-840, 60 W/ch., \$100; GOLF BAG, Calloway pro-tour, blk., \$40; PUTTER, Ping J-blade, \$30; MATTRESSES, Serta, "Perfect Sleeper," w/box-spring and frame, twin, pair, \$300/ea.; GRANDFATHER CLOCK, Howard Miller, \$500. 213/810-8801.

CANOE, Old Towne, Katadyn, 16', burgundy, used once, approx. 6 yrs. old, retails for \$849, sell for \$600. 957-7742.

CEMETERY PLOTS, 4, Rosehills, Garden of Autumn; garden is developed and plots are valued at \$2,500/ea., sacrifice for \$2,300/ea., sell each plot separate if necessary. 562/404-3464, ext. 230, Janelle, btw. 7 am - 4 pm or 909/986-4611, after 6 pm.

CHAIR, Morris, mission style, + matching ottoman, hand built from northern red oak, Aniline dyed leather, English dovetail joinery, exc. cond., extremely classy & comfortable, 40 5/8" H x 34 3/4" W x 37 1/2" D, purch. from Restoration Hardware 3 yrs. ago for \$1,600, sell for \$800; see at www.ginkoleaf.net/morris. 626/798-4265.

DESK for computer, mobile, cherry veneer, O'Sullivan model 61925, exc. cond., bought for \$120, sell for best offer. 626/449-0997.

DINING TABLE, smoked glass top, 72 x 42," w/6 upholstered fabric chairs, exc. cond., \$149/obo; BIKE, men's, 26," 15 spd., helmet, gd. cond., \$20; CAMCORDER, Panasonic, digital, PVDV203, 6 mini-DV tapes, digital still camera, SD card, 700x zoom, 1 lb., new in box, never used, full warr., \$349. 909/592-2279.

DRUM SET w/double pedal base, \$250/obo. 626/447-4734.

DRYER, made by General Electric, electric, heavy duty, extra large capacity, 5 cycle, automatic, gd. cond., \$135. 545-0455.

FURNITURE: sectional, Bassett, 2-pc., 1 is a sleeper, floral print; coffee table, 40," end tables, two, 26," mission style, photos avail., all in gd. cond., parts can be sold separately. \$500/obo. 626/791-6101.

GOLF BALLS, used, clean, \$0.50/each. 626/398-3681 or 626/584-3852.

GOLF CLUBS: men's, MacGregor, 3 thru S, 9, w/bag, \$200; women's, Lange III 5-S, 7, w/bag, \$200; PULL CARTS, 2, \$40/ea.; ROWING MACHINE, \$20; EXERCISE BIKE, \$20. 248-1669.

GITAR, Yamaha, full-size, acoustic, brand new, w/papers & warranty, \$245. 241-8208.

HOT TUB, Hot Springs, 300 gal., redwood finish, new cover, perfect working cond., \$500. 957-1043.

INCOME TAX GUIDE BOOK for 2004, J.K. Lasser's, w/forms, brand new, \$10; DIET TAPES, Jenny Craig, set of 14, \$25; CARD SHUFFLER, Johnson, collectible, all-metal construction w/the exception of friction wheels that drive the cards and carved-wood wood handles; stands ~6" handle-high, and ~9 by 6," flanges and handle inclusive; \$35. 790-3899.

JACKET, men's, for hunting, below hip-length, sz. 40 long, strong, w/inside bandolier pockets, vg. cond., expected remaining life 10 yrs., dark khaki, \$35, make offer; SLEEPING BAG, adult, roll-up, summer/fall weight, inside like new, \$10; TENNIS SHOES, Wilson, sz. 12, like new, \$35 value, \$9. 626/793-1895.

COMPUTER, Power Mac 6500 mini-tower; + Sony monitor, HP DW 600; scanner, Umax, all cables; extra ink cartridges, instruction books, pre-installed software, many CDs, vg. cond.; all for \$20. 626/351-6141, K. Shimada.

MISC: dishwasher, Kitchen Aid, portable, \$50; tricycle, girls, exc. cond., \$25; girl's cottage, Little Tyke's, telephone, stove/sink for cooking, 4 shutters/windows, door, plastic tea sets, pots, dishes, mint cond., always kept indoors, orig. price \$300, sell for \$200, will deliver if within the Pasadena area; toys/puzzles/blocks for toddlers, inexpensive; air conditioner, Dura-craft Hepa w/filters; dog house, med. size, \$30; bird cages, assorted. 249-6248.

MISC: mountain bike, downhill, Stinky Kona Gold, 15," \$600/obo; dishwasher, small Frigidaire built-in, 18," just over one yr. old, \$75; futon, blk., full, \$50; couch, Ethan Allen, flower print, \$100; stack washer and gas dryer, Maytag, \$400. 848-2214, David or Karen.

MOVING SALE: sofa bed, queen size, in brown cloth fabric & solid oak wood frames, accented w/gold trim, bed hardly used, gd. cond., always covered w/slipcover; coffee table, solid oak wood w/glass inserts, gd. cond., all for \$100 or sell separately. 909/896-9685.

MOVING SALE: futon, mattress, cover, \$75; chair, papasan, cushion, \$30; office chair, \$20; 3-shelf bookcases, \$10/ea.; floor pillows, \$10/ea.; VCR, \$25; coffee table, lg., pine, \$35; end table, pine, \$20; microwave, \$40; CD/DVD storage units, \$5/ea.; toaster, \$5; golf bag, \$20; stereo w/CD, tape, am/fm, equalizer, \$25; TV stand, \$15; ceiling fan w/light, \$40; Sega game system w/games, \$30. 248-5848.

MOVING SALE: sofa, black velour, \$175; vacuum, \$30; standing lamp w/3 sm. glass shelves, \$25; coffee table, small, wood/faux marble, \$30; end tables, matching, \$20/ea.; storage unit w/drawers and rollers, small, \$10; picture frames: lg., plastic, \$10; small, plastic, \$5/ea.; rug, small, black/gray, \$15; medicine cabinet, new, wood, \$20; TV, 17," \$40; Sony Playstation 1 w/games, \$30. 626/304-1007.

ORGAN, Yamaha 415, electronic console w/13 pedals, 3 keyboards, 144 rhythm patterns, pd. \$7,500, sacrifice for \$2,000; PORT REPLICATOR, for IBM Thinkpad, works with T20, T21, A20, A21, or X, R series, like new, \$85. CONTROLLER CARD, Ultra ATA, w/cable, fits into 32-bit PCI 2.1 or 2.2 expansion slot on motherboard, brand new, \$20. 790-3899.

OSCILLOSCOPE, Sony Techtronik, model 335, w/accessories, exc. cond., rarely used,

\$550/obo. 626/793-3393.

ROUTER, Cisco Linksys, 4 port, switched Cable/DSL, high-speed, still in box, \$35. 626/794-4541, Jim.

SOFA, dual-recliner, \$250; LOVESEAT, \$100; PIANO, Spinet, \$350; COMPUTER DESK, \$30. 626/799-7593.

SPA, Hotsprings Jetsetter, 2-person, outdoor, portable, w/cover, electric, 110V, always hot, cheap to operate, 10 yrs. old, recond. motor/pump/heater 3 yrs. ago, works great, needs cosmetic work, incl. power cord + GFI breaker switch, you move, \$500/obo. 249-2123.

SURFBOARD, Spyder Jarvis, size 6.5', 1 yr. old, exc. cond., owner moved to Colorado for college. \$500/obo. 790-3109.

TABLE for computer, oak, 48" W, w/keyboard tray and 2 drawers; HUTCH w/2 shelves behind door and open bookcase, all for \$150/obo. 626/795-7419.

Vehicles/Accessories

'92 ACURA Integra GS, 2 dr. hatchback, 1.8L, 4 cyl., 5-spd. manual, 155K mi., white/graphite, a/c, ABS, pwr. windows/locks/mirror/antenna, cruise control, sun/moon roof, rear spoiler, no modifications except radio/CD/MP3 player, exc. interior, well-maint., service records avail., major service at 150K mi., 1 owner, \$4,200/obo; see at <http://home.earthlink.net/~ck000/integra>. 626/791-7219 or KheeChan@earthlink.net.

'90 AUDI 90, 4 dr., pearl white, fairly gd. cond., \$2,000/obo. 626/797-4807.

'00 CHEVY Corvette coupe, blk./blk., 14K mi., 6 spd., ext. warr., CD changer, loaded, \$30,000/obo. 248-5253 or reverb2020@yahoo.com.

'00 CHEVY Silverado, LS 1500, ext. cab, Vortec 5.3, loaded, CD, custom exhaust, exterior color pewter, bedliner, tonneau covers, tow package, 66K mi., exc. shape, \$16,795/obo. 626/285-8069.

'93 CHEVY Suburban 2500, 2 x 4, 350, V8, exc. cond., red, street scene front grill, well-maint., low mi., a/c, power doors/windows, wood trim dash, custom front seat/sheepskin covers, running boards, new tires w/Weld wheels and Flow Master exhaust, \$10,500/obo. 626/359-7666.

'87 CHEVY van conversion, V8 EFI, 146K mi., new catalytic converter & tires, updated a/c, captain's chairs, rear seat opens into queen size bed, \$3,000/obo. 957-3130.

'86 CHEVY Suburban 3/4 ton, 454, all power, dual a/c, 180K mi., new alternator/battery, current tags, must sell, \$4,000/obo. 562/902-0321 or 562/587-7394.

'98 FORD Ranger, 77K mi., auto, air, exc. cond., very clean, \$5,995. 626/798-8071, Renee.

'89 GMC Suburban, orig. owner, gd. cond., 350, V8, cruise control, a/c, ps/pb/pw. roof rack, towing package, new tires, recent valve job, \$3,200/obo. 352-4102.

'70 HARLEY DAVIDSON Shovelhead/Chopper, all S&S motor parts, rebuilt motor, extra parts, very fast, must see, \$11,500. 244-8822.

'01 HONDA Prelude, 17K mi., platinum, manual 5 spd., power windows/moonroof, CD, meticulously maintained, near exc. cond., \$18,000/obo. 626/975-8824.

'03 JAGUAR S-Type, 3.0, V6, silver, 11K mi., under warranty, take over lease payments. 310/748-4745, Alireza.

'98 JEEP Grand Cherokee, special ed., 5.2L, V8, 4WD, 75K mi., pwr everything, cass/CD, prem. sound, dual airbags, pwr seats, moonroof, roof rack, tinted windows, tow pkg., tilt wheel, oversized tires w/new spare, prem. whls., 4-whl. ABS, lots of after-market additions, must sell, great cond., \$11,400/obo. 352-6646, Ben, or verdugo_verde@comcast.net, pics. avail.

'93 JEEP Wrangler, 4 cyl., 5 spd., am/fm/CD, oversize tires, locking trunk/console, new muffler, fun to drive, runs great, exc. cond., \$5,600/obo. 352-4102.

'97 NISSAN Maxima GLE, great car, V6, JN1CA21D3VT866307, auto., 91K mi., blk. w/blk. leather, all tint, all pwr., airbags, a/c, CD Bose sound, cc., factory alarm, moonroof, \$6,750/obo. 621-4809 or car@vahag.net.

'97 OLDSMOBILE 88 LS, beige, leather, a/c, cruise, am/fm/CD, power locks/windows, low mi. (48K), gd. cond., \$5,740/obo. 790-4448.

'02 TOYOTA Avalon XL, automatic, 4-dr. sedan, silver spruce w/ivory leather int., pwr. steering/doors/windows/seats/cruise control, CD/cassette player, exc. cond., 60K mi., \$17,000. 909/228-9302.

'98 TOYOTA Sienna minivan, V6 LE, 194 HP, 63K mi., light blue, exc. cond., dual a/c & sliding doors, 12-disc CD changer, 1 owner, ext. warranty, \$12,999/obo. 909/592-2279.

'97 TOYOTA Tacoma, 2 dr. pickup truck, only 42K mi., \$5,500/obo. 667-5535.

'89 TOYOTA Camry sedan DX, 4 dr., 4 cyl., white, automatic transmission, gd. cond., only 83K mi., orig. owner, \$2,700. 502-1282.

Free

DOG: Female Husky mix; small in size, approx. 50 lbs., very sweet and smart, lives on a chain in the area. 626/292-1520.

SPA/ACUZZI, lg., working, N.E. Pasadena, gd. rigid cover, heater, pumps, hoses, supplies, paperwork & more, seats 10 friends, new in '88, used regularly, well-maint. 626/405-2206.

Wanted

PICKUP TRUCK, previously owned, reasonably priced. 626/449-9563, Nick.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.

STORAGE SPACE for 22' travel trailer; would like to exchange use of 4-person Softub as monthly storage fee. 439-3730, Todd.

TRANSISTOR RADIOS, old, especially odd shaped and advertising. 248-5282.

VOLLEYBALL PLAYERS, coed, no beginners please, Tues, nights 8 to 10 p.m. at Eagle Rock High School, \$4/nt. 956-1744, Barbara.

For Rent

ALTADENA, 3 mi. from JPL, nice neighborhood, furnished, includes linen, laundry, parking, kitchen, patio; late March or early April, \$500 + sec. dep. 626/798-4821.

HOLLYWOOD, large single apt., 1 block from Metro and shopping, util. paid, stove & refrig., sec. bldg., newly decorated, street parking, \$695. 310/377-0316, Gerri.

LA CANADA guesthouse, 1 bd., liv. rm, full kitch., very priv., \$1,200. 241-8208, Irena, eves.

LA CRESCENTA apt., 1 bd., 10 min. from JPL, \$825. 626/445-0884, John.

MONTEREY PARK house, 3 bd., 2 ba., 2-car garage, convenient area, exc. Brightwood School, near Atlantic & Harding, \$2,000. 626/576-5059.

PASADENA condo to share, quiet, exc. location, lg., freshly painted, very private wing (room + bath w/generous closets), shared kitchen, living rm., lg. balcony w/peaceful view, laundry facility, secure parking, CA/Los Robles, female pref., \$470. 626/796-9221.

PASADENA studio, completely remodeled, walking distance to PCC, util. and parking included, no pets, \$550. 590-2793.

PASADENA bungalow home, nr. JPL/Caltech, fireplace, wood floors, nice kitchen, lots of storage, 3 bd., one is a master bd., 2 ba., laundry room, 2-car garage w/working shop area, enclosed backyard w/fruit trees and flowers, gardener, no pets, \$1,500 + \$1,500 sec. dep. 626/794-0455, Oil or Bill.

PASADENA apt., 2 bd., 1 ba., garage, priv. patio, laundry rm., a/c, stove & refrig., fireplace, carpets, mini-blinds; gd closet/cabinet space, outdoor lighting; gardener, water & trash pd.; great area, Sierra Madre Blvd., nr. California, close to Caltech, \$1,250. 805/967-7725.

PASADENA apt., unfurnished, 2 bd., 1.5 ba., 2-story townhome-style, dishwasher, cent. a/c, refrig. & stove, laundry room, patio, parking, new carpet, close to Caltech & JPL, \$1,095 + util. 626/577-3060, ext. 14, Dennis.

PASADENA, roommate wanted to share 2 master bd. apt. on S. Madison, large closets, balcony, central a/c, dishwasher, gated complex w/sun decks, pool, fitness center, laundry facilities, secure parking, within 1 mi. of S. Lake, Paseo, Old Town, Caltech, minutes to JPL, \$800. 626/372-1111, Sonya and cat.

PASADENA, Spanish house, 2 bd., 1 ba. + large den, near Caltech & PCC, lg. living/dining/bonus rooms, new carpet, laundry hookups, gated yard, pets invited, 15 min. to JPL, \$1,650 + dep. 626/676-1482.

PASADENA bungalow, 1 bd., 1 ba., stove & refrig., washer/dryer, a/c, Pergo floors, pets invited, close to Caltech, \$1,050. 626/796-0406.

SUNLAND room, immaculate hardwood flrs., entirely new ba., 12.3 mi. from JPL, furnished or unfurn., TV, VCR, linens provided; roomie shares driveway, laundry, kitchen, bathroom, util.; priv. entry rm. opens onto 1/4- acre yard, BBQ, vegetable garden, fruit trees, patio, pets invited, storage in garage, non-smoker, \$450. 951-9744, Shannon, or itsypoo@yahoo.com.

TEMPLE CITY, 2 bd. plus lg. office/bonus rm., remodeled kitchen, top of the line appliances, central air, hardwd. floors, travertine, custom paint, private yard, \$1,850. 760/633-3857.

Real Estate

ALTADENA, N.E., home in prime area north of NY Drive, 2 bd., 1.5 ba, den, formal dining room, fireplace, French doors in den + dining rm. lead out to lg. yard, newly painted in and out, refinished wood floors and new tile floors; plus a new 500 sq. ft. bonus room w/lots of storage, \$549,000. 952-6007.

NATIONAL FOREST, 68 acre, 2 lg. bd., 1 ba., lg. den, fireplace, kitchen, 2 refrig., pantry, washer/dryer tools, electric propane 288 gal., barn, tools, workshop, tractor, etc. 790-5586 or 542-2411, Chris Thomas.

OXNARD, mobile home nr. beach, 2 bd., 1 1/2 ba., stove, refrig, w & d, large priv. lot, room for 3 cars in driveway (2 covered), large storage "barn" at rear of property; highest monthly space rent has been \$548, which includes all util. except phone; senior park, must be 55 or over; \$48K cash. 292-6028, Steve, cell.

Vacation Rentals

BALBOA ISLAND, cute upstairs apartment, fully furnished, 2 bd., 1 ba., deck, parking, laundry, steps to bay, slps. 5; avail. weekly, June-September, \$1,000-\$1,500/week. 626/429-3677 or bettys@earthlink.net.

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, nr. skiing, beautiful master bd. suite, slps. 6. 949/786-6548.

CAMBRIA house, ocean front, exceptional white water view, accom. up to 4 people, all amenities provided. 702/256-1359.

FLORIDA, New Smyrna Beach, fully furn. condo, 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, quiet, relaxing, overlooking beach; BBQ, pool, game rm., great ocean view, easy walk to stores and restaurants; slps. 6; weekly or monthly. 909/981-7492, Darlene or dfhaug@yahoo.com.

HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, laundry fac., low season rate \$115/nite/2, high season rate \$130/nite/2, \$15/nite/add'l person. 949/348-8047, or jackandrandy@cox.net.

MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitch. incl. microwave, D/W, cable TV, VCR, phone, balcony w/mtn. view, Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc'nt. 626/798-9222, 626/794-0455 or valeriec@caltech.edu.

OCEANSIDE deluxe beach condo, 2 bd., 2 ba., gated complex, JPL disc'nt. 760/433-4459 or beachvisitors.com.

OCEANSIDE deluxe beach condo, 1 bd., 1 ba., gated complex, JPL disc'nt. 760/433-4459 or beachvisitor.com.

OCEANSIDE condo, fully furn. 2 bd., 2 ba., fireplace, full kitch.; quiet, relaxing, beautiful beachside setting; BBQ, pool/spa, game rm., great ocean view; easy walk to pier + restaurants, slps. 8; weekly or monthly. 909/981-7492, Darlene or dfhaug@yahoo.com.

OCEANSIDE condo, on the sand, charming, 1 bd., panoramic view, walk to pier or harbor, pool/spa, game room, slps. 4. 949/786-6548.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach, on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.

TIMESHARE, weeks and single days avail., you pick date and location. 626/676-1408.

TIMESHARES: Choose from 1,900+ 5-star vacation resorts in 75 countries, incl. Hyatt & Marriott; luxurious residential-style studios w/turn. kitchenette, starting at \$511 for 7 nts; larger units w/1-3 bd., living rm, full kitch. 626/794-9579 or livestarresorts@earthlink.net.